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G5R RB81

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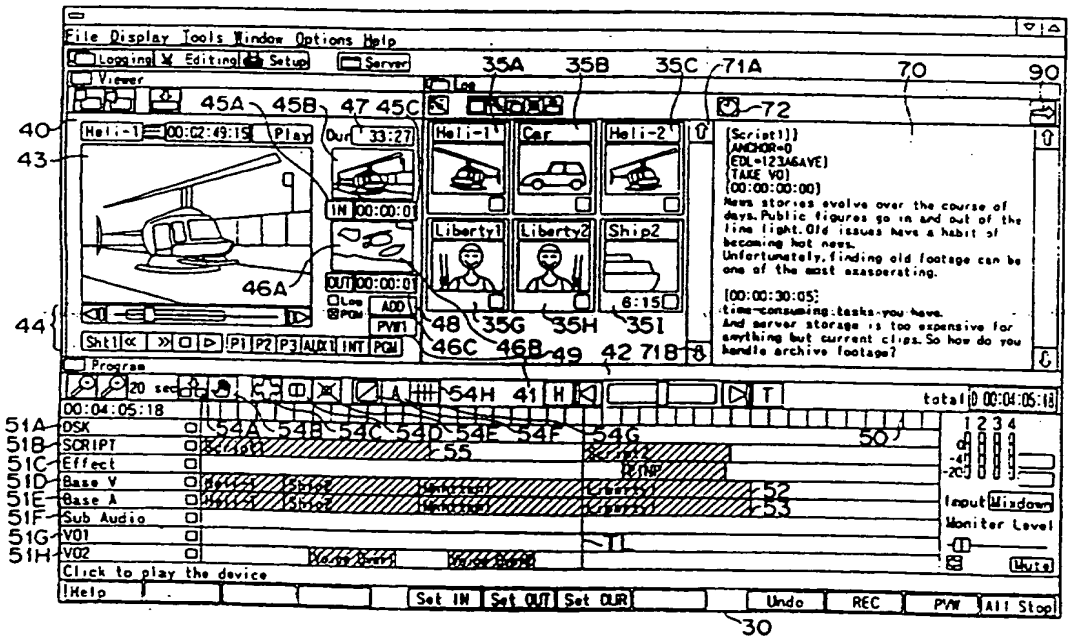
(54) Abstract Title
Video editing apparatus

(57) An editing apparatus creates a desired edited video and/or audio list by combining a plurality of video materials and/or audio materials in a sequence desired by an operator. The apparatus comprises input means 2,3 for inputting textual data and display means 19 for displaying indicator marks with lengths corresponding to the length of specified audio and/or video material at a position specified along a time line. An additional indicator mark is displayed corresponding to the amount of textual data inputted through the input means 2,3 at a position specified along the time line. The apparatus for creating an edit decision list allows an operator to create an edit decision list by visual comparison of the audio and/or video indicator marks with the indicator marks for the textual data.

F I G . 4



GB 2 336 025 A

FIG. 1

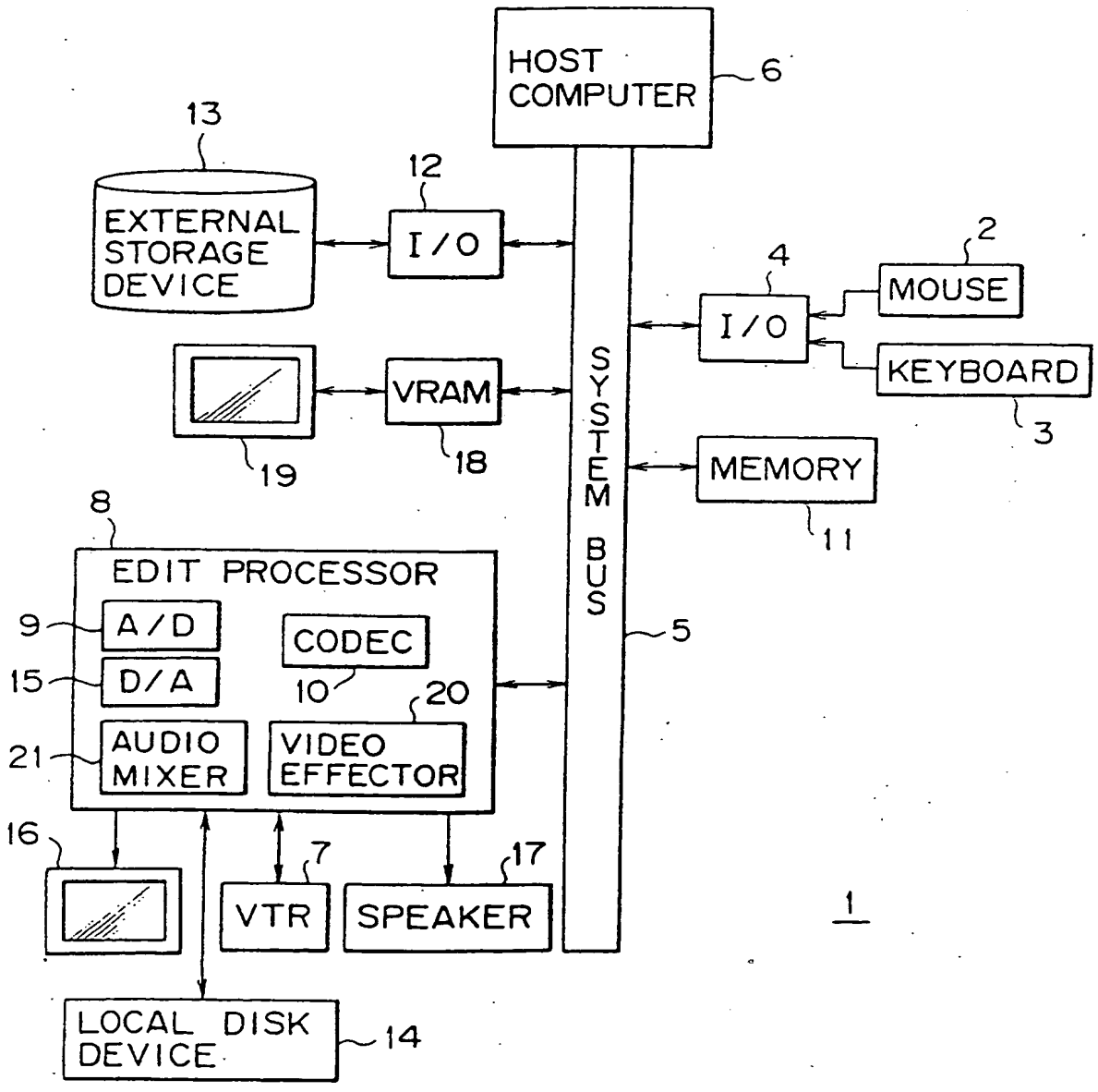

HOST COMPUTER
6
13
12
EXTERNAL STORAGE DEVICE
I/O
2
4
MOUSE
I/O
KEYBOARD
3
VRAM
19
18
SYSTEM BUS
MEMORY
11
8
EDIT PROCESSOR
9
A/D
CODEC
15
D/A
10
20
21
AUDIO MIXER
VIDEO EFFECTOR
5
16
7
17
VTR
SPEAKER
1
LOCAL DISK DEVICE
14

FIG.2

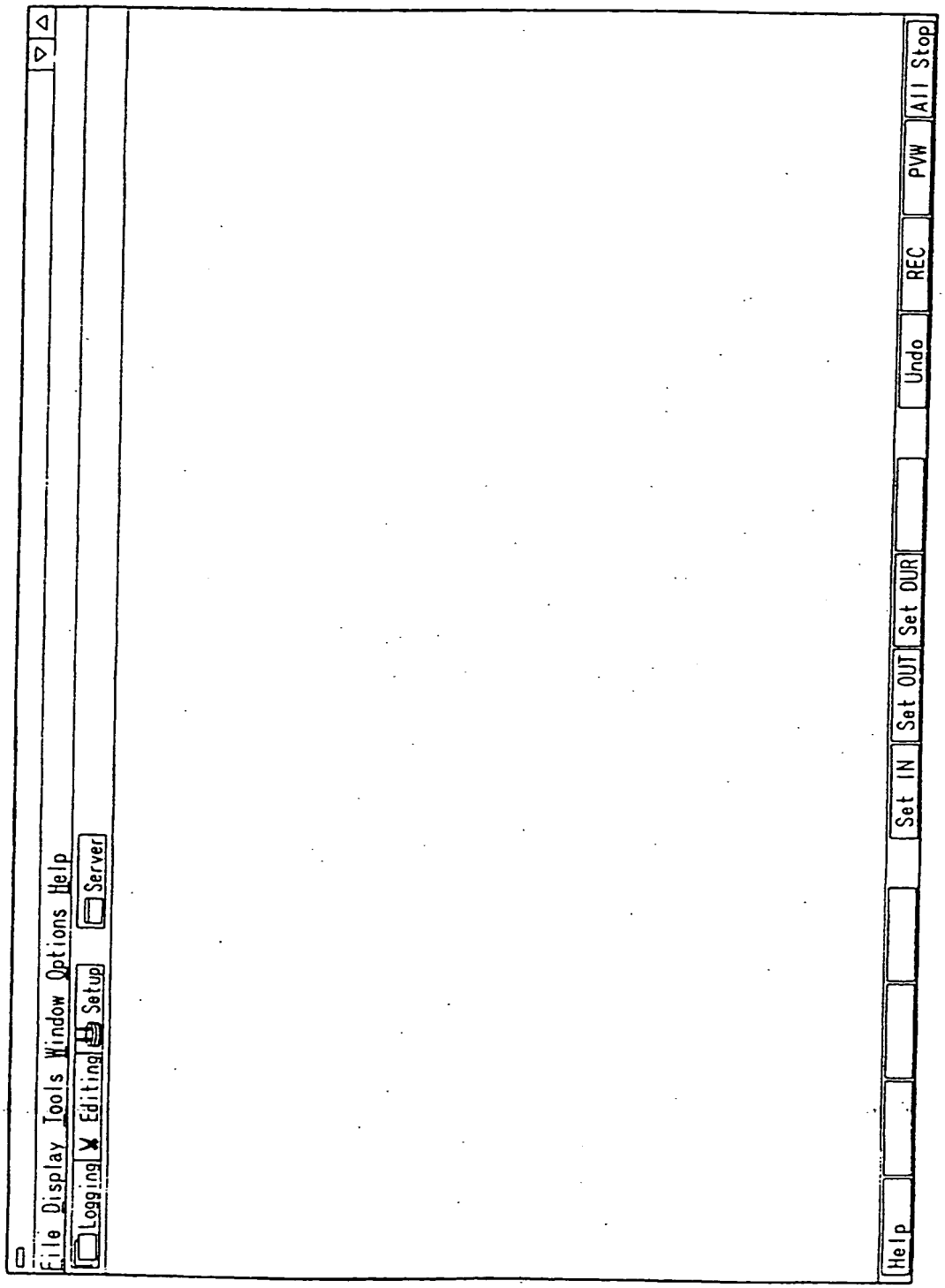

File Display Tools Window Options Help
Logging
Editing
Setup
Server
Help
Set IN
Set OUT
Set DUR
Undo
REC
PVW
All Stop

FIG. 3

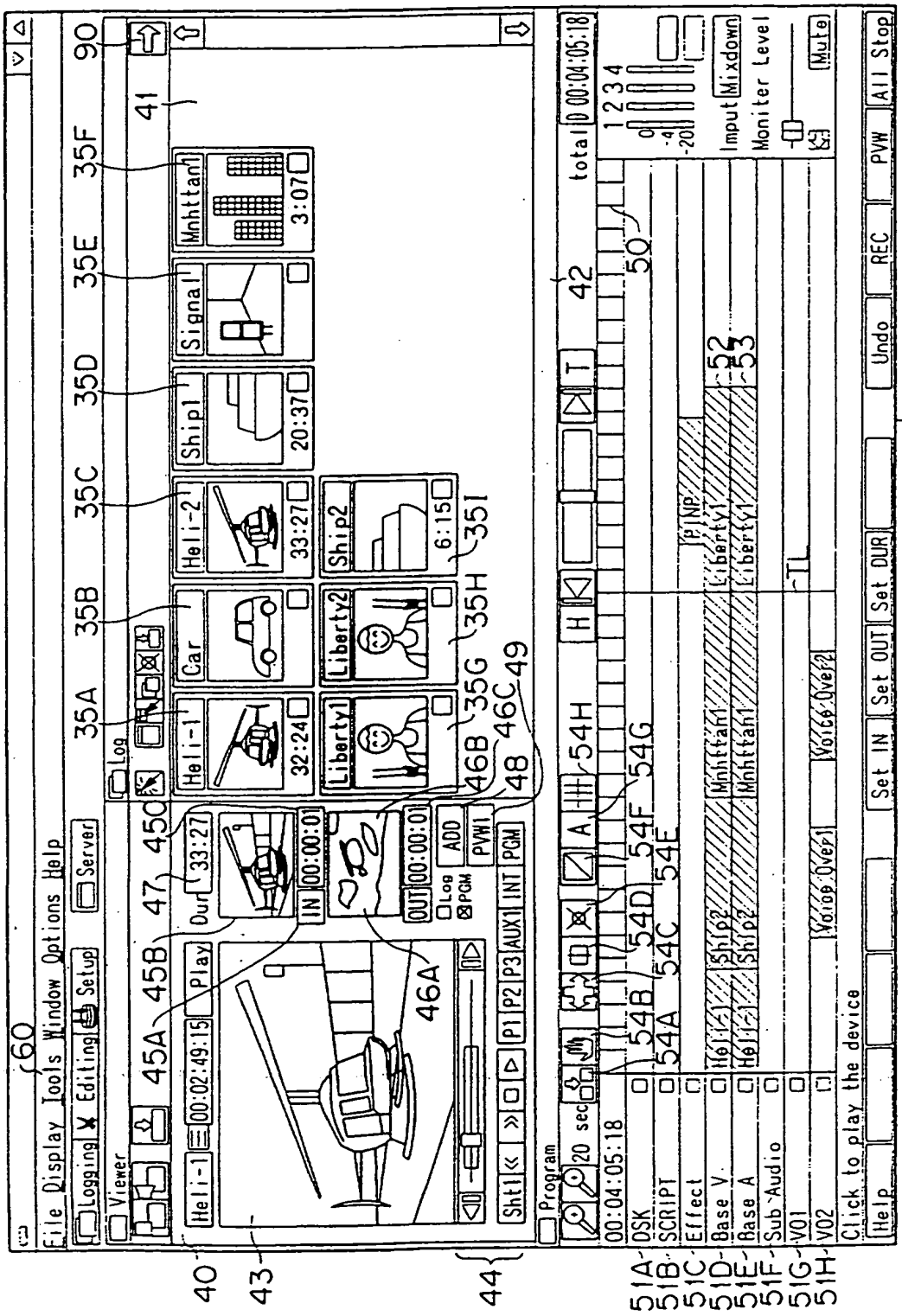

File Display Tools Window Options Help
Logging
Editing
Setup
Server
Viewer
Log
Program
Heli-1
Car
Heli-2
Ship1
Signal
Mnhttan
Liberty1
Liberty2
Ship2
Play
Set IN
Set OUT
Set DUR
Undo
REC
PVW
All Stop
Mute
Click to play the device
Help
total 00:04:05:18
Imput Mixdown
Moniter Level
60
90
41
42
50
52
53
30
40
43
44
45A
45B
45C
46A
46B
46C
47
48
49
35A
35B
35C
35D
35E
35F
35G
35H
351
54A
54B
54C
54D
54E
54F
54G
54H
51A
51B
51C
51D
51E
51F
51G
51H

FIG.4

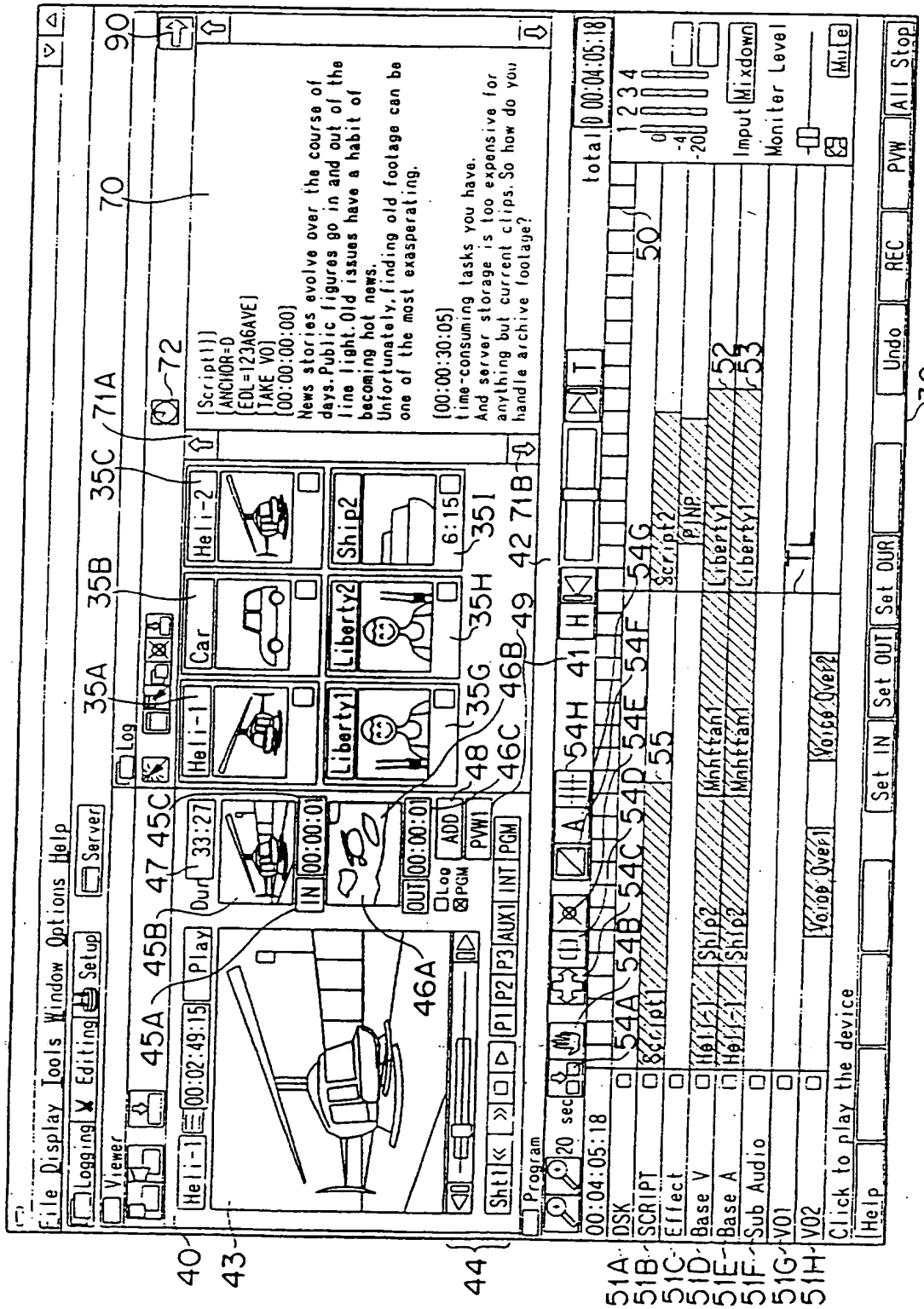

File Display Tools Window Options Help
Logging
Editing
Setup
Server
Viewer
Log
Heli-1
Car
Heli-2
Liberty1
Liberty2
Ship2
Play
Program
Shtl
Set IN
Set OUT
Set OUR
Undo
REC
PVW
All Stop
Mute
Click to play the device
Help
Voice Over1
Voice Over2
Manhtan1
Liberty1
Ship2
Script1
Script2
Monitor Level
Input
Mixdown
total
00:04:05:18
DSK
SCRIPT
Effect
Base V
Base A
Sub Audio
V01
V02
30
35A
35B
35C
35G
35H
351
40
43
44
45A
45B
45C
46A
46B
46C
47
48
49
50
52
53
54A
54B
54C
54D
54E
54F
54G
54H
55
70
71A
71B
72
90
51A
51B
51C
51D
51E
51F
51G
51H

FIG. 5

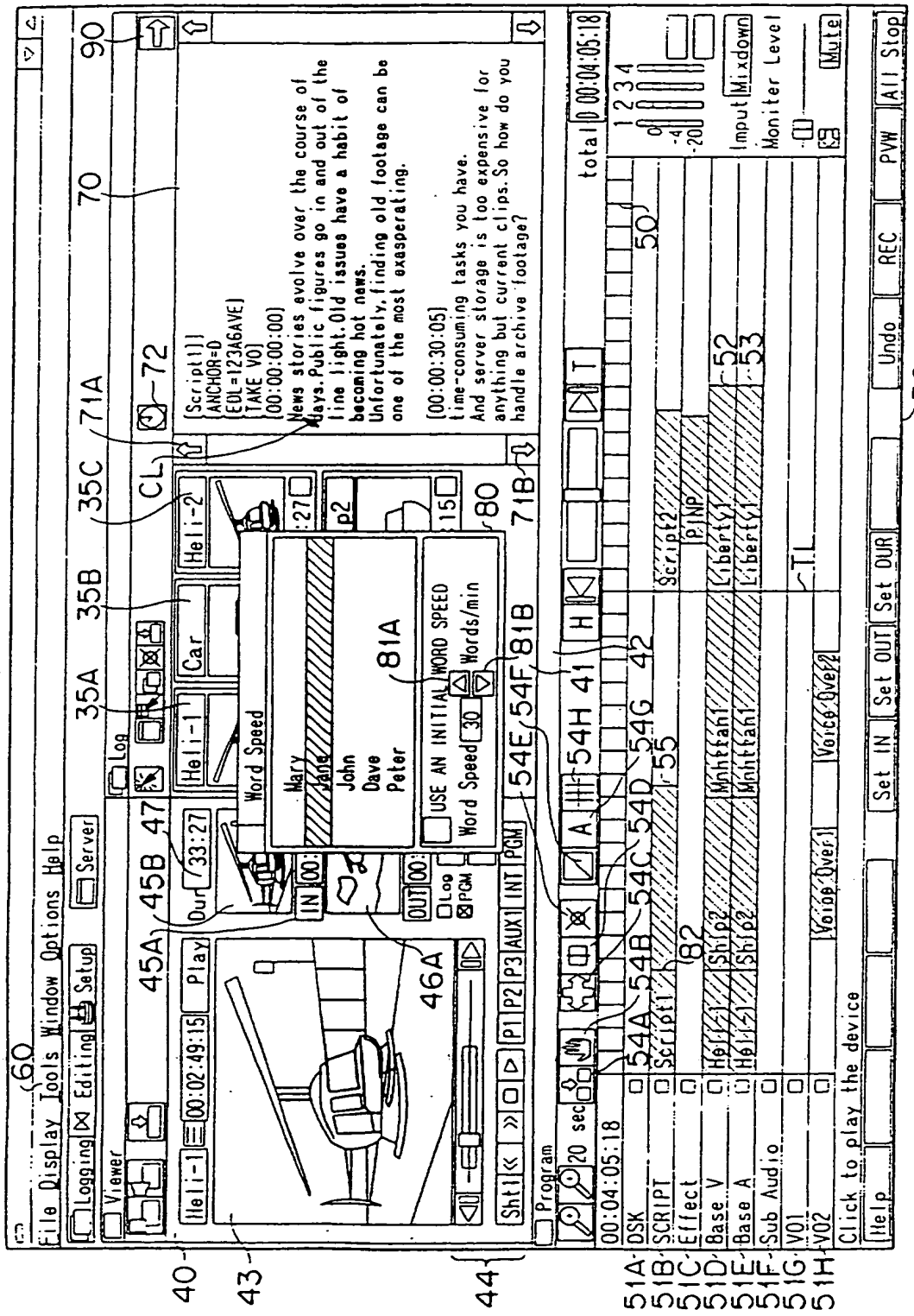

File Display Tools Window Options Help
Logging
Editing
Setup
Server
Viewer
Log
Heli-1
00:02:49:15
Play
Dur
33:27
IN
OUT
Heli-1
Heli-2
Car
Word Speed
Mary
Jane
John
Dave
Peter
81A
USE AN INITIAL
WORD SPEED
Word Speed
30
Words/min
Log
PGM
Shtl
P1
P2
P3
AUX1
INT
PGM
Program
20 sec
00:04:05:18
DSK
SCRIPT
Effect
Base V
Base A
Sub Audio
V01
V02
Script1
Heli-1
Shtl2
Manhtan1
Voice Over1
Voice Over2
[Script1]
ANCHOR=0
EDL=123A6AVE
TAKE VO
[00:00:00:00]
News stories evolve over the course of days. Public figures go in and out of the line light. Old issues have a habit of becoming hot news.
Unfortunately, finding old footage can be one of the most exasperating.
[00:00:30:05]
time-consuming tasks you have.
And server storage is too expensive for anything but current clips. So how do you handle archive footage?
total 00:04:05:18
Script2
Liberty1
Imput
Mixdown
Moniter Level
Mute
Help
Set IN
Set OUT
Set DUR
Undo
REC
PVW
All Stop
Click to play the device
40
43
44
30
45A
45B
46A
47
35A
35B
35C
CL
71A
71B
72
80
81A
81B
90
70
50
52
53
54A
54B
54C
54D
54E
54F
54G
54H
55
82
41
42
51A
51B
51C
51D
51E
51F
51G
51H

FIG. 6

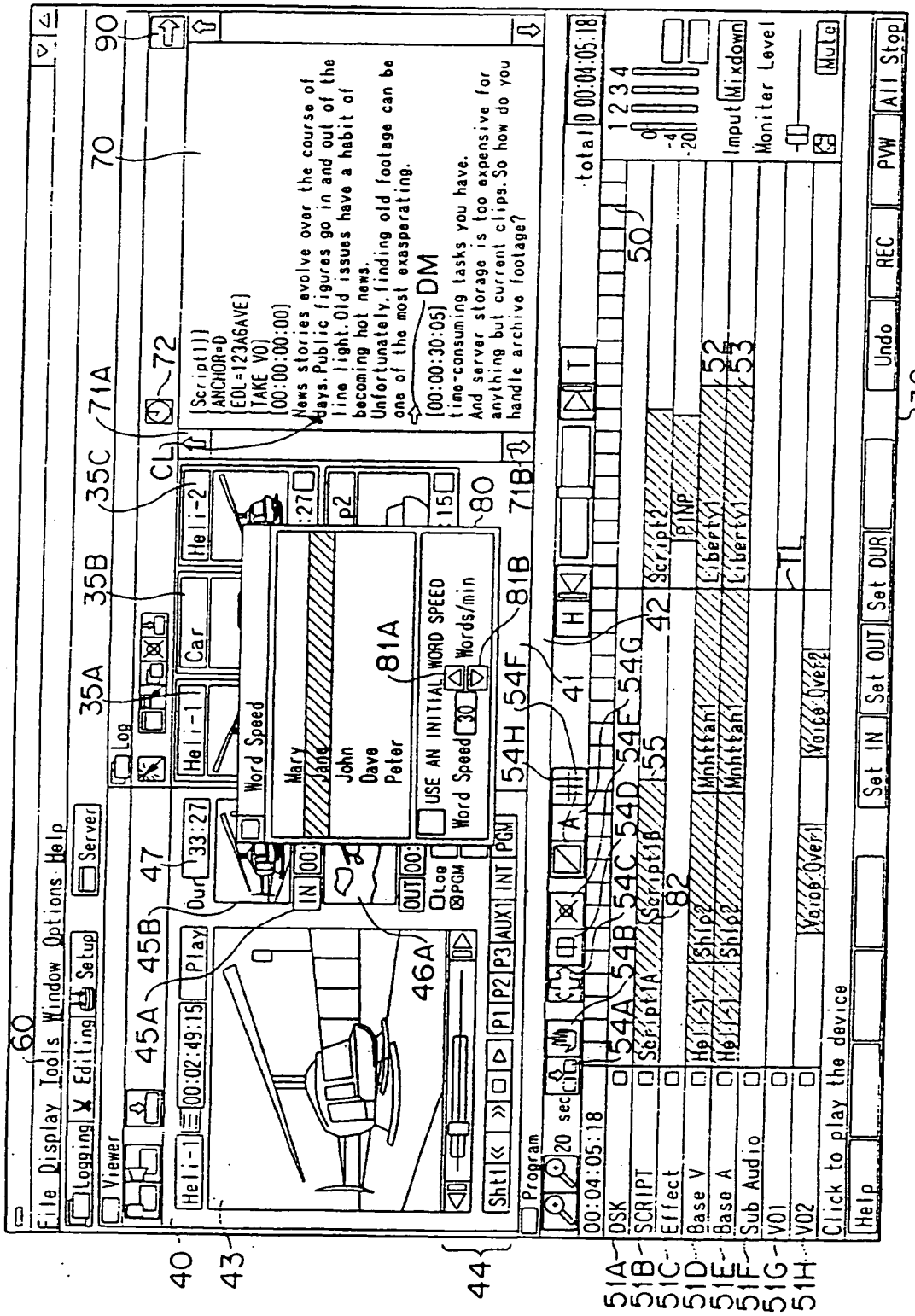

File Display Tools Window Options Help
Logging
Editing
Setup
Server
Viewer
Log
Heli-1
Heli-2
Car
Play
Word Speed
Mary
Jane
John
Dave
Peter
USE AN INITIAL WORD SPEED
Word Speed
Words/min
Program
Sht1
P1
P2
P3
AUX1
INT
PGM
Set IN
Set OUT
Set DUR
Undo
REC
PVW
All Stop
Click to play the device
Help
60
70
71A
71B
72
80
81A
81B
90
35A
35B
35C
45A
45B
46A
47
54A
54B
54C
54D
54E
54F
54G
54H
55
82
52
53
30
40
41
42
43
44
50
51A
51B
51C
51D
51E
51F
51G
51H

FIG. 7

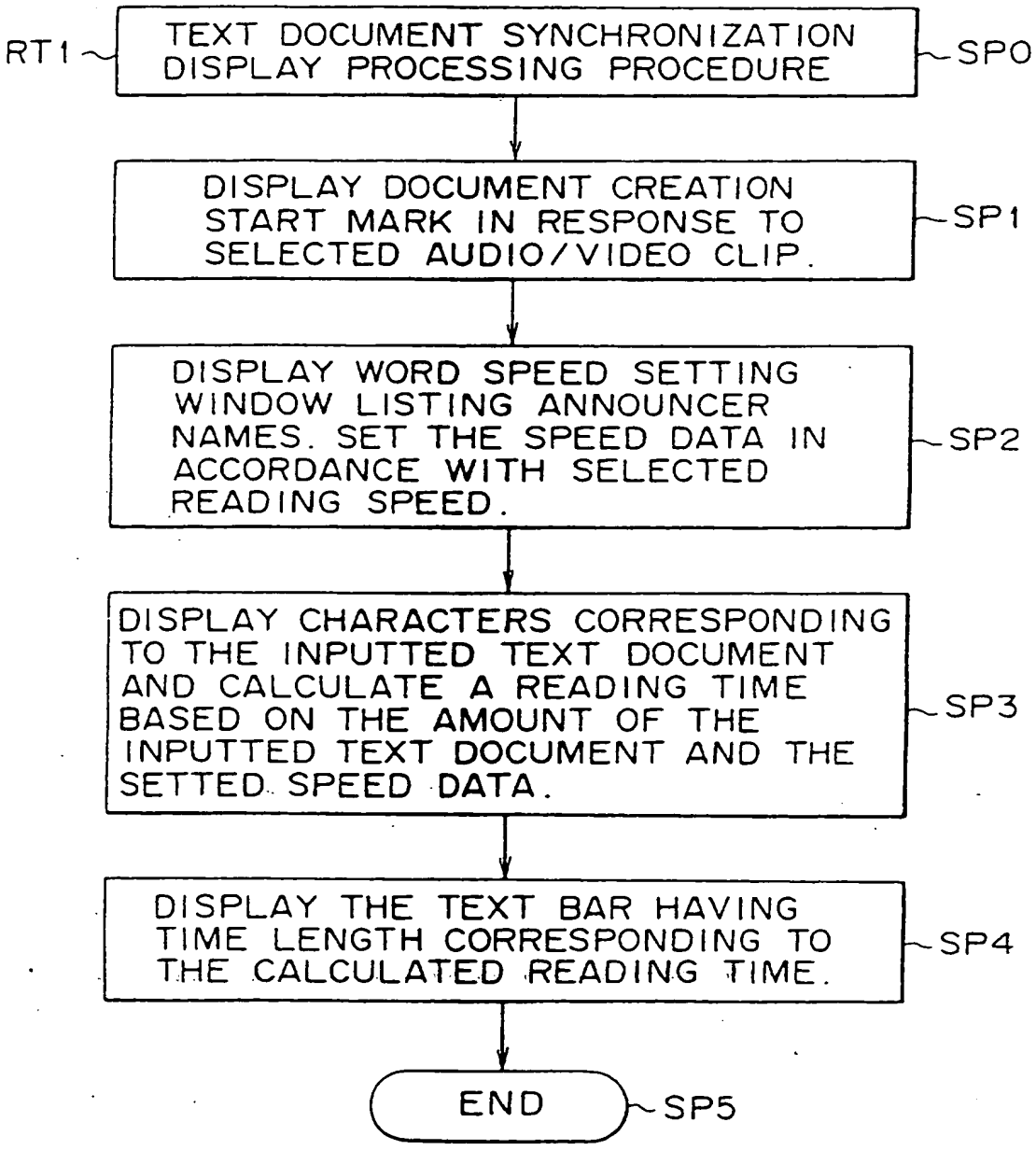
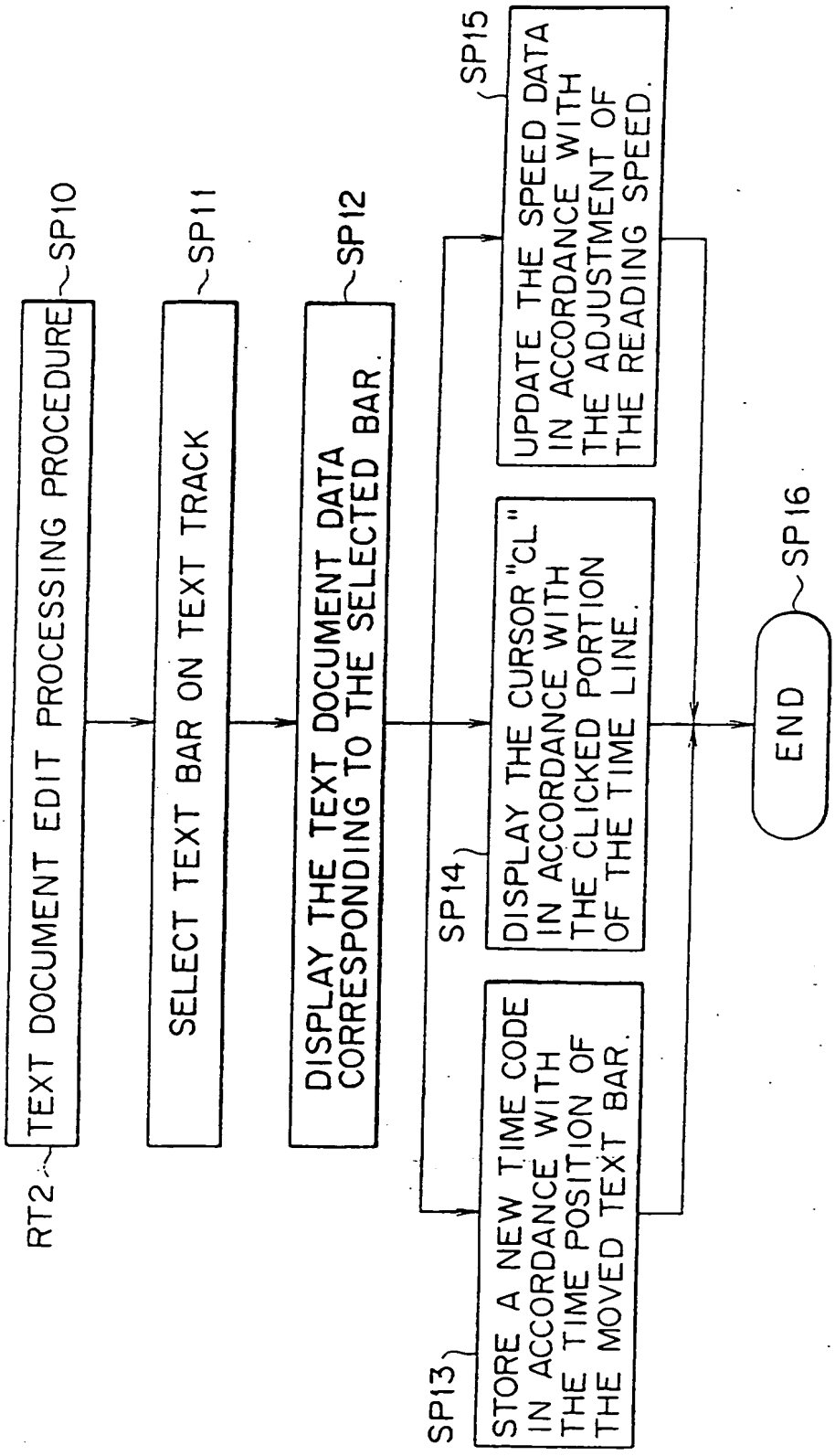

RT1
TEXT DOCUMENT SYNCHRONIZATION DISPLAY PROCESSING PROCEDURE
SP0
DISPLAY DOCUMENT CREATION START MARK IN RESPONSE TO SELECTED AUDIO/VIDEO CLIP.
SP1
DISPLAY WORD SPEED SETTING WINDOW LISTING ANNOUNCER NAMES. SET THE SPEED DATA IN ACCORDANCE WITH SELECTED READING SPEED.
SP2
DISPLAY CHARACTERS CORRESPONDING TO THE INPUTTED TEXT DOCUMENT AND CALCULATE A READING TIME BASED ON THE AMOUNT OF THE INPUTTED TEXT DOCUMENT AND THE SETTED SPEED DATA.
SP3
DISPLAY THE TEXT BAR HAVING TIME LENGTH CORRESPONDING TO THE CALCULATED READING TIME.
SP4
END
SP5

FIG. 8


RT2
TEXT DOCUMENT EDIT PROCESSING PROCEDURE
SP10
SELECT TEXT BAR ON TEXT TRACK
SP11
DISPLAY THE TEXT DOCUMENT DATA CORRESPONDING TO THE SELECTED BAR.
SP12
SP13
STORE A NEW TIME CODE IN ACCORDANCE WITH THE TIME POSITION OF THE MOVED TEXT BAR.
SP14
DISPLAY THE CURSOR "CL" IN ACCORDANCE WITH THE CLICKED PORTION OF THE TIME LINE.
SP15
UPDATE THE SPEED DATA IN ACCORDANCE WITH THE ADJUSTMENT OF THE READING SPEED.
END
SP16

VIDEO EDITING APPARATUS

The present invention relates to video editing apparatus, such as that suitable for creating an edit decision list which is applicable to production of broadcast news programs.

Traditionally, when a news program in a broadcast station is produced, the audio/video materials available to an editor to create the program materials used during the actual news broadcast are edited in an editing room of the broadcast station. A journalist creates a text document or script corresponding to the program materials. The text document is read by a news announcer in accord with the program materials during the news broadcast.

The text document is prepared by a journalist in accordance with the running time of the program material to be displayed. In other words, the length of time of the text to be used in accordance with the video is calculated based on an estimation which considers, for example, the reading speed of the announcer reading the text document.

The editor using an apparatus for creating an edit decision list, displays a video image selected from among the audio/video materials stored in a video tape recorder. The corresponding audio display is outputted from a speaker. Based on the video display and audio output, the editor prepares an edit decision list (EDL) based on the running time of the program material to be displayed during the news broadcast. The EDL specifies the order of combining clips which the editor has selected from the audio/video materials.

Before the news broadcast begins, the journalist or announcer visually checks the edited audio/video material on a monitor to confirm that the edited audio/video material matches in length of time with the contents of the text document created by the journalist.

There is a current need for an editing apparatus which allows an edit decision list to be created wherein text information corresponding to the audio/video clips selected by the editor from a plurality of audio/video materials and stored in a video tape recorder is displayed and there are indicators which confirm for the editor that the edited audio/video material matches in length of time with the contents of the text document created by the journalist.

Respective aspects of the invention are set out in claims 1 and 5.

A preferred embodiment of the present invention provides an apparatus for creating an edit decision list which allows an editor or a journalist to display audio/video material and a corresponding text document of the program materials which make up the news program in a manner whereby the editor can visually determine if the audio/video materials and corresponding text are synchronized in terms of time. This may make the editing process of a broadcast news program a more efficient operation.

In accordance with one embodiment of the present invention, there is provided an editing apparatus for combining a plurality of stored video and audio materials in order to produce an edited video and audio display. The editing apparatus comprises input means for inputting textual data and display means for displaying various indication marks. The indication marks have lengths corresponding to, for example, the display time of the video clip. The indication marks are positioned along a time line so an operator can visually check and compare the lengths of the indication marks for the video material, audio material, special effects material or any other additional material. The editing apparatus also displays indication marks, along a time line, having lengths which correspond to the amount of textual data inputted through the input means.

The indication marks having lengths corresponding to the amount of textual data inputted can be displayed in synchronization with the indication marks corresponding to the display time of the specified video and/or audio material or any other material represented by an indication mark. Thus, an operator can make editing decisions by visually comparing the indication marks. For instance, the operator can visually compare video indications with the indications corresponding to the amount of textual data inputted in order to confirm that the video and audio data to be read by the announcer during a news broadcast are synchronized.

The invention will now be described by way of example with reference to the accompanying drawings, throughout which like parts are referred to by like references, and in which:

FIG. 1 is a block diagram of an editing apparatus for creating an edit decision list in accordance with a preferred embodiment of the invention;

FIG. 2 schematically illustrates one arrangement of a graphical user interface screen in the above-mentioned embodiment;

FIG. 3 schematically illustrates another arrangement of a graphical user interface screen in the above-mentioned embodiment;

FIG. 4 schematically illustrates a further arrangement of a graphical user interface screen in the above-mentioned embodiment;

FIG. 5 schematically illustrates yet another arrangement of a graphical user interface screen in the above-mentioned embodiment;

FIG. 6 schematically illustrates yet a further arrangement of a graphical user interface screen in the above-mentioned embodiment;

FIG. 7 is a flowchart indicative of a text document synchronization display processing procedure; and

FIG. 8 is a flowchart indicative of a text document edit processing procedure.

Referring now to the drawings, FIG. 1 represents a block diagram of an editing apparatus for creating an edit decision list. In this apparatus, a mouse 2 and a keyboard 3 are connected to a host computer 6 through an input/output circuit 4 and a system bus 5. This allows an operator to issue various commands to the host computer 6 from the mouse 2 and the keyboard 3.

In the video signal capture mode, the host computer 6 sends a video signal supplied from a video tape recorder (VTR) 7 to an analog-to-digital (A/D) converter 9 in an editing processor 8.

The analog-to-digital converter 9 converts the supplied video signal into a digital signal and sends the resultant video data and audio data to a CODEC (Coder Decoder) 10. The CODEC 10 compresses and encodes the received video and audio data by a predetermined standard such as JPEG (Joint Photographic Coding Experts Group) and stores the resultant data into the storage area of the memory 11 (formed in correspondence with an actual display screen) on a frame basis through a system bus 5 in sequence.

The video and audio data stored in the memory 11 on a frame basis are sequentially read by the host computer 6 through the system bus 5 and then supplied to a local disk device 14 (e.g., a hard drive) through the editing processor 8. At the same time, under the control of the host computer, a new time code is added to these items of data, which are then arranged into a file to be stored in the local disk device 14.

In the editing mode, the host computer 6 reads the stored video and audio data from the local disk device 14, and supplies the data to the editing processor 8.

The editing processor 8 decompresses the video and audio data supplied from the local disk device 14 to a predetermined baseband by the CODEC 10 and then converts the decompressed data into an analog signal through a digital-to-analog converter (D/A) 15. The resultant video and audio data are sent to a monitor 16 and a speaker 17, respectively. The corresponding video is displayed on the monitor 16 and the corresponding audio is outputted from the speaker 17.

Based on the video data supplied from the local disk device 14, the editing processor 8 generates image data (hereafter referred to as display image data) for displaying a predetermined screen on the monitor and stores the generated data into a VRAM (Video Random Access Memory) 18 along with the audio data. Then, the display image data and the audio data stored in the VRAM 18 are read in a predetermined timing relation and sent to a monitor (hereafter referred to as a PC monitor) 19 of a Personal Computer (PC). Initially, a Graphical User Interface (GUI) screen 30 as shown in FIG. 2 is displayed on the PC monitor 19.

The file name of an original AV file to be edited is inputted by the mouse 2 or the keyboard 3. The host computer 6 reads the video and audio data corresponding to the original AV file from the local disk device 14 and supplies the data to the editing processor 8 through the system bus 5.

In the editing processor 8, a video effector 20 is used to effect the video data. An audio mixer 21 executes various mixing operations on the audio data. The resultant video and audio data is stored in the local disk device 14.

The editing processor 8 decompresses the video data supplied from the local disk device 14 to a predetermined baseband through the CODEC 10 and converts the decompressed data into an analog signal through the digital-to-analog converter 15, the resultant analog signal is stored in the video tape recorder 7.

In addition, based on an operation program stored in the memory 11, the host computer 6 reads the video data from the memory 11 as required and supplies the video data to the PC monitor 19 as the display image data through the VRAM 18. Various windows to be described later are displayed. A cursor controlled by a mouse 2 can be moved on the screen and alphanumeric characters are entered from the keyboard 3.

The host computer 6 stores the video data corresponding to the original AV file read from the local disk device 14 into the VRAM 18, and then the display image data is displayed on the GUI screen on the PC monitor 19.

The GUI screen is partitioned in three parts in this embodiment. A clip creating window 40, a selected material display window 41, and a time line window 42 are displayed at predetermined positions on the GUI screen displayed on the PC monitor 19.

In order to edit the video material displayed on the image display section 43 of the clip creating window an operator creates various "clips". The clip creating window 40 is used to

create the clips. The operator specifies a portion of the audio/video material to be used and by clicking an operation button 44, the local disk device 14 executes an operation responsive to the operation button 44. The video reproduced from the local disk device 14 is then displayed on the image display section 43 of the clip creating window 40.

To create the clips, the operator clicks an in-point button 45A and an out-point button 46A to specify an in-point (start point of the clip) and an out-point (end point of the clip). The frame image and time code of the specified in-point are displayed in an in-point image display section 45B and an in-point time code display section 45C respectively. The frame image and time code of the specified out-point are displayed in an output-point image display section 46B and an out-point time code display section 46C respectively. The duration between in-point and out-point (namely, the time length of the clip) is displayed in a duration display section 47.

Having specified an in-point and an out-point of the video material, the operator registers the portion between the in-point and the out-point of that audio/video material as a clip by clicking an add button 48. The frame image of the registered clip is then displayed in the selected material display window 41.

After specifying the in-point and the out-point as described above, the operator can check the contents of the clip by clicking a preview button 49.

After registering a plurality of clips, the operator uses the time line window 42 to perform an editing operation using a "drag and drop" method.

The operator moves the cursor to the in-point image of a desired clip in the selected material display window 41 and then presses the button of the mouse 2 to drag the desired clip to a desired position. The operator, uses a time scale 50 in the time line window 42 as a reference to drop the clip in a desired position. The operator moves the cursor (not shown) along the time scale 50 to a desired position on video track 51D of tracks 51A through 51H arranged along the time scale 50 and releases the button of the mouse 2 in order to complete the drag and drop operation.

The result of dragging a video clip into a position in the time line window 42 is a bar 52, displayed in the video track 51D, having a predetermined color and a length corresponding to the amount of time that the selected clip is to be displayed when outputted. If the audio/video material from which the clip has been made includes audio, a bar 53 having the same length as the bar 52 is displayed on the audio track 51E at the same position on the time scale 50.

The operator repeats the above-mentioned process, thus, placing the clips that were previously created in a desired sequence. The clips are sequentially displayed as bars 52 and 53 on the video track 51D and audio track 51E. The length of the bars indicate the display time for each of the individual clips. The bars continue on the time scale 50 from the first time code on the time scale 50 to a desired time code (namely, a desired length of time).

The displaying of the bars 52 and 53 on the video track 51D and the audio track 51E of the time line window 42 indicates that the video and audio of the clip corresponding to

the bars 52 or 53 will be displayed and outputted at the time indicated by the time scale 50 when the edited video and audio is outputted. As a result of the above-mentioned process, an edit decision list is created which sequentially specifies the clips which will be displayed as the edited video and audio.

It should be noted that, when creating an edit decision list as described above, if a special effect is to be used between or in conjunction with a first clip and a second clip, the operator clicks a special effect select button 54F of the buttons 54A through 54H for selecting various processing arranged in the upper portion of the time line window 42. A predetermined window (not shown) containing a plurality of icons (hereafter referred to as effect icons) indicative of executable various special effects is opened on the GUI screen 30. The icon for a desired special effect processing is dragged and dropped at a predetermined position on the effect track 51C of the time line window 42.

Thus, an instruction for executing the special effect processing for the effect icon attached at the link between the first and second clip images can be inputted.

As described, with the edit decision list creating apparatus 1, the operator selects desired audio/video material from among a plurality of audio/video materials stored in the video tape recorder 7 and creates a clip by specifying the in-point and out-point of the selected material, thereby creating an edit decision list based on the created clip.

In addition to the above-mentioned arrangement, the edit decision list creating apparatus 1 allows an operator to select a tools button 60 in the upper left portion of the GUI

screen 30 when the GUI screen 30 is displayed as shown in FIG. 3. When the tools button is selected, a pull-down menu (not shown) is displayed. Selecting "SCRIPT" from the pull-down tools menu opens the dialog box containing the script which corresponds to the video. A window as shown in FIG. 4 (hereafter referred to as a text document creating window 70) is displayed at a predetermined position in the selected material display window 41.

In the text document creating window 70, the operator can input textual data. Of course, the textual data becomes the script that is read by the announcer. By pressing either a scroll-up button 71A or a scroll-down button 71B located on the left side of the document creating window 70, the operator can scroll up or down the text document displayed in the text document creating window 70.

When the operator selects an icon 72 located in the upper left portion of the text document creating window 70, a window (hereafter referred to as a word speed setting window) 80 as shown in FIG. 5 is superimposed in the center of the GUI screen 80.

A plurality of announcer names are displayed in the word speed setting window 80. The operator can select any of the announcer names. The speed at which each announcer reads a manuscript (hereafter referred to as a manuscript reading speed) is selected from preset announcer manuscript reading speeds. The manuscript reading speed is displayed in the lower portion of the word speed setting window 80 in the number of words per minute that can be read by a specific announcer. The setting of the displayed manuscript reading speed may be changed by operating the up or down keys 81A and 81B, respectively.

To input textual data, the operator clicks a desired clip represented by the bars 52 and 53 displayed on the video track 51D and the audio track 51E, respectively, in the time line window 42. A text document creation start mark 82 is displayed corresponding to the time code of the in-point of the selected clip onto the text track 51B. This makes it unnecessary, when specifying the document creation start position 82, for the operator to directly specify the time code of the in-point of the corresponding desired clip.

When the operator has finished inputting textual data into the text document creating window 70, the host computer 6 displays a text bar 55 having a length corresponding to the number of words of the inputted text document in the text track 51B of the time line window 42. The host computer 6 changes the length of the text bar 55 displayed in the text track 51B in response to an increase or decrease in the number of words in the inputted text document.

The host computer 6 calculates a reading time for the textual data by dividing the number of words of the inputted text document by the speed data corresponding to the present reading speed. Then, the host computer 6 displays a text bar 55 having a time length corresponding to the calculated reading time.

To determine if the video material is synchronized with the text document an operator can visually check the text bar 55 displayed on the text track 51B in the time line window 42 as textual data is inputted into the text document creating window 70. The text bar 55 displayed on the text track 51B is displayed with dotted lines (or by flashing) when the

operator is inputting textual data. When the inputting of textual data is finished, the text bar 55 is displayed with solid lines.

In the time line window 42, when an operator moves the time line cursor "TL" to a desired position, a corresponding column specification cursor "CL" is displayed in the left hand column of the text document creating window. The moved time line cursor TL of the time line window moves in conjunction with the column specification cursor CL in the text document creating window 70.

When the operator specifies a desired column by using the column specification cursor CL in the text document creating window 70, the time line cursor TL is moved to the position corresponding to the specified column.

Furthermore, when the operator moves the time line cursor TL by a drag and drop operation, the video image corresponding to the time code of the time line cursor TL is displayed in the video display section 43 in the clip creating window 40.

By visually checking the text track 51B of the time line window 42, the operator can create a desired text document in the text document creating window 70 which is not longer in time than the corresponding video clip. Once the text document is created, an operator can adjust the length of the desired clip on the video track 51D and the audio track 51E in the time line window 42 corresponding to that text document, thereby ensuring the text document and the audio/video material are synchronized in terms of time. In other words, the time needed to read

the text document is not longer or much shorter than the time needed to view the audio/video material.

When the operator selects an icon 90, the above-mentioned column specification cursor CL is displayed at a predetermined position in the text document creating window 70 as shown in FIG. 6. When the operator moves the column specification cursor CL to a position where the text document is to be divided and clicks the mouse, an arrow mark (hereafter referred to as a division mark) DM is displayed at that predetermined position and the text document is divided into a first half above the division mark DM and a second half below the division mark DM.

A new document creation start position 82 is formed at the position of the time code corresponding to the division mark DM on the text track 51B in the time line window 42.

The host computer 6 executes the above-mentioned processing operations in the text document creating window 70, the selected material display window 41, and the time line window 42 of the GUI screen 30 according to a text document synchronization display processing procedure RT1 shown in FIG. 7.

When the operator selects the display mode, the host computer 6 begins the text document synchronization display processing procedure RT1 in step SP0. In step SP1, the operator selects a clip from bars 52 and 53 displayed on the video track 51D and the audio track 51E in the time line window 42 in the GUI screen 30. The host computer 6 reads time code data of the in-point of the selected audio/video clip from the memory 11. Then, the host computer 6

displays a document creation start mark 82 based on the time code data read from the memory 11 onto the text track 51B in the time line window 42.

In step SP2, when the operator selects the icon 72, the host computer 6 superimposes the word speed setting window 80 at a predetermined position on the GUI screen 30 displayed on the PC monitor 19. The operator can then select an announcers name and reading speed. The host computer 6 sets the speed data for the selected clip at step SP2 based on the selected reading speed of the specified announcer.

In step SP3, the operator selects the tools button 60 and then "script" from the pull-down menu. The host computer 6 displays the text document creating window 70 at a predetermined position in the selected material display window 41 of the GUI screen 30 displayed on the PC monitor 19.

Now, the operator can input textual data by keyboard operation. The host computer 6 displays characters corresponding to the inputted textual data in the text document creating window 70. At the same time, the host computer 6 calculates a reading time from the amount of inputted textual data and the set speed data.

The host computer 6 at step SP4 displays the text bar 55 having a length which corresponds to the calculated reading time relative to the document creation start position 82 in the text track 51B.

As the text document is inputted in the text document creating window 70, the host computer 6 changes the length of the text bar 55 in the text track 51B according to the

amount of textual data being input and the manuscript reading speed of the specified announcer. In step SP5, the host computer 6 ends the text document synchronization processing procedure RT1.

When the display mode is selected and a desired text document is created in the text document creating window 70 as described above, the host computer 6 enters the text document edit processing procedure RT2 in step SP10 as shown in FIG. 8.

In step SP11, the operator selects a text bar 55 on the text track 51B in the time line window 42. The host computer 6 at step SP12 reads the textual data corresponding to the selected text bar 55 from the memory 11 in order to display the textual data in the text document creating window 70.

When the operator has moved the text bar 55 to a desired position on the time scale 50, in step SP13 the host computer 6 stores a new time code in accordance with the time position of the document creation start position 82 of the moved text bar 55 into the memory 11. In step SP16, the host computer 6 ends the text document edit processing procedure RT2.

When the operator clicks a desired time position on each track in the time line window 42, in step SP13, the host computer 6 reads the time code data corresponding to the clicked position from the memory 11. Then, the host computer 6 calculates the position in the text document corresponding to the time code, and displays the column specification cursor "CL" on the left side of the text document. In step SP16, the host computer ends the text document edit processing procedure RT2.

When the operator selects the icon 72, the host computer 6 in step SP15 superimposes the word speed setting window 80 in the center position of the GUI screen 30. The host computer 6 updates the manuscript reading speed of the selected announcer and stores the result as speed data into the memory 11 when the manuscript reading speed of the selected announcer is adjusted by the operator to a desired value by use of the up and down keys 81A and 81B, respectively. In step SP16, the host computer 6 ends the text document edit processing procedure RT2.

In the above-mentioned process, the operator selects the text track 51B corresponding to a desired clip. Indication marks are displayed on the video track 51D and the audio track 51E in the time line window 42 on the GUI screen 30. The editing apparatus for creating an edit decision list displays the document creation start position 82 at the same time code as the in-point of the clip on the text track 51B. Then, the operator displays the word speed setting window 80 on the GUI screen 30 in a superimposed manner and sets the manuscript reading speed of a desired announcer.

The operator displays the text document creating window 70 on the GUI screen 30 and inputs the textual data. The time necessary for actually reading the textual data at the above-mentioned reading speed is calculated. As a result, a frame corresponding to the length of time obtained by the calculation is displayed as text bar 55 in the text track 51B in the time line window 42 with reference to the document creation start position 82.

Consequently, the bars 52 and 53 of the video track 51D and the audio track 51E and the text bar 55 of the text track 518 are displayed in parallel on the time scale 50 in the time line window 42. Therefore, the operator can visually check the length between the audio/video material and the text document on the time line and easily adjust the timings of an audio/video material cutting point and/or a text document start position on the time scale 50.

When the operator selects a time code from a position on the text track 51B in the time line window 42, a video corresponding to the specified time code is displayed on the video track 51D and the text corresponding to the specified time code is displayed. Therefore, the operator can easily modify the contents of the text document at a desired position on the time scale 50 even after text document creation while visually checking the corresponding video.

According to the above-mentioned process, in the edit decision list creating apparatus 1, while textual data is sequentially inputted into the text document creating window 70 of the GUI screen 30, the text bar 55 is displayed on the text track 51B in the time line window 42 in a manner according to the inputted text documents. The text bar is expanded as textual data is input and the text bar decreases if textual data is deleted. Consequently, the text bar 55 can be displayed in synchronization in time with the bars 52 and 53 displayed on the video track 51D and the audio track 51E. This novel arrangement allows the operator to visually check the audio/video and text document in order to create an edit decision list which makes the editing apparatus for creating an edit decision list 1 capable of creating an edit decision list in a more

efficient manner because the operator can visually determine whether clips are in synchronization with textual data.

In the above-mentioned embodiment, the video data and audio data to be supplied through the system bus 5 under the control of the host computer 6 are stored in the local disk device 14. However, the present invention is not limited to this constitution. For example, the video data and audio data to be supplied through the system bus 5 may be stored in the external storage device 13 based on RAID (Redundant Array of Inexpensive Disks) through the input/output circuit 12.

In the above-mentioned embodiment, the input means for inputting text documents is constituted by the keyboard 3 and the text document creating window 70 in the GUI screen displayed on the PC monitor 19. However, the present invention is not limited to this constitution. For example, the input means may be constituted by a personal computer externally connected to the edit decision list creating apparatus 1.

In the above-mentioned embodiment, the display means for displaying the bars (indication marks) 52 and 53 displayed on the video track 51D and the audio track 51E in the time line window 42 and the text bar displayed on the text track 51B along the same time line (the time scale 50) is constituted by the host computer 6, the memory 11, and the PC monitor 19. However, the present invention is not limited to this constitution. A wide variety of other constitutions may be applied to the display means.

In the above-mentioned embodiment, the bars 52 and 53 displayed on the video track 51D and the audio track 51E providing the indications and the text bar 55 displayed on the text track 51B providing additional indications are displayed in frames on the time scale 50. However, the present invention is not limited to this constitution. For example, indication marks may be displayed in bars defined by solid or dotted lines for example. Alternatively, a character mark may be displayed along the time line as an indication. Essentially, any mark having any shape and color may be used as an indication if it allows the operator to visually check its expansion (the length) along the time line.

In the above-mentioned embodiment, the present invention is applied to an editing apparatus capable of creating an edit decision list that specifies the edit contents for obtaining desired edited video and/or audio by combining a plurality of video materials and/or audio materials. However, the present invention is not limited to this embodiment. The present invention is widely applicable to any other display apparatuses that can display textual data in synchronization with audio and/or video materials.

As described and according to the invention, an editing apparatus capable of creating an edit decision list that specifies the edit contents for obtaining desired edited video and/or audio by combining a plurality of video materials and/or audio materials comprises an inputting means for inputting textual data and display means for displaying indication marks of the length corresponding to the material length of the specified audio and/or video material at a position specified along the time line and additional indication marks responsive to the amount

of textual data inputted through the input means at a position specified along the time line. The edit decision list creating apparatus thus constituted allows the operator to produce an edit decision list by visually comparing the audio and/or video material with the textual data. Consequently, an editing apparatus for creating an edit decision list allows the operator to create an edit decision list in a more efficient manner.

CLAIMS

1. An editing apparatus for producing an edited video and audio display by combining a plurality of video displays and/or audio outputs, comprising:

inputting means for inputting textual data; and

display means for displaying indication marks having lengths which correspond to the display time of the specified audio output and/or video display at a position specified along a time line and an additional indication mark corresponding to the length of said textual data inputted through said input means at a position specified along said time line.

2. The editing apparatus according to claim 1, wherein said display means displays said additional indication mark with a length corresponding to the amount of said textual data and based on the estimated reading speed of said textual data.

3. The editing apparatus according to claim 1, wherein said display means displays said textual data inputted through said input means and, when any position on said time line in said additional indication mark is specified, displays a predetermined cursor at a portion corresponding to the specified position in the displayed textual data.

4. The editing apparatus according to claim 1, wherein, when any position on said time line in said additional indication mark is specified, said display means displays the start position of said indication mark corresponding to the specified position as the start position of said additional indication mark.

5. An editing apparatus for editing video materials, the apparatus comprising:

means for producing a plurality of video clips from said video materials, wherein a duration of said video clip is defined by an in-point and an out-point;

means for producing a video program by rearranging said plurality of video clips;

display means for displaying a graphical user interface comprising a text input window to input textual data and a time line window to generate said video programs, wherein said time line window has a video track for displaying a video bar indicator having a time length corresponding to said duration of said video clip and a text track for displaying a text bar indicator having a time length corresponding to an amount of textual data inputted in said text input window;

control means for controlling said display means so that a time position of said text bar indicator is associated with a time position of said video bar indicator and so that said time length of said text bar indicator is changed in response to said amount of textual data inputted in said text input window.

6. The editing apparatus according to claim 5, wherein said control means sets a speed data indicating a number of readable words within a predetermined time period and decides said time length of said text bar based on said number of words of said inputted script text and said speed data.

7. An editing apparatus substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Application No: GB 9907711.7 **Examiner:** Donal Grace
Claims searched: 1 to 7 **Date of search:** 23 July 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): G5R (RB81)

Int Cl (Ed.6): G11B 27/02, 27/028, 27/031

Other: Online: EPODOC; JAPIO; WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2312081 A (TEKTRONIX)	1 to 6
X	GB 2311677 A (SONY)	1 to 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

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